

CLAIMS

1. (Currently Amended) A system for interacting with targeted tissue of a patient and for use in conjunction with a remote programmer and a power source, the system comprising:

a central control module adapted for subcutaneous implantation, the central control module comprising;

a housing configured to house the power source; and

a wireless receiver disposed in said housing, the wireless receiver configured to be coupled to the power source and to receive programming signals from the remote programmer;

a first lead coupled to the central control module that comprises at least one connector, the first lead carrying power from the power source and digital communications including the programming signals from the wireless receiver, the power and the digital communications being combined on the at least one connector;

a satellite module adapted for subcutaneous implantation coupled to said central control module by means of said first lead, said satellite module comprising:

a processor coupled to said wireless receiver by the first lead and configured to be coupled to the power source by the first lead;

a communication module coupled to said processor for communicating with said central control module by the first lead;

a switching module coupled to said processor;

a memory coupled to said communication module and said processor;

a signal generator coupled to the switching module;

a sense amp; and

an A/D converter coupled to said sense amp and said memory; and

a plurality of second leads adapted for subcutaneous implantation coupled to said sense amp and said switching module, each of said second leads having at least one tissue interaction element,

wherein said processor is configured to receive said programming signals from said wireless receiver over the first lead, to control the signal generator to generate stimulation

signals, and to control said switching module to selectively distribute the generated stimulation signals or receive sensed signals to or from the plurality of second leads.

2.-3. (Cancelled)

4. (Currently Amended) The system for interacting with targeted tissue of a patient as recited in claim 1 wherein the central control module further includes a communication module coupled to the power source and the satellite module ~~wherein communication between the central control module and the satellite module is combined with power delivery to minimize interconnections.~~

5. (Original) The system for interacting with targeted tissue of a patient as recited in claim 4 wherein the central control module is limited to providing power to the satellite module and acting as a communication hub of the system.

6. (Cancelled)

7. (Original) The system for interacting with targeted tissue of a patient as recited in claim 1 wherein the satellite module further includes:

- a logic block coupled to the switching module; and
- a buffer coupled to the logic block and the memory.

8. (Original) The system for interacting with targeted tissue of a patient as recited in claim 1 wherein the central control module and satellite module is limited to two wire interconnections for providing power and communication.

9. (Original) The system for interacting with targeted tissue of a patient as recited in claim 1 wherein the central control module and satellite module is limited to four wire interconnections for providing power, communication, and stimulation signals.

10. (Original) The system for interacting with targeted tissue of a patient as recited in claim 1 wherein control of a therapy stimulation signals to the targeted tissue of a patient is controlled by the satellite module.

11.-24. (Cancelled)

25. (Currently Amended) An implantable medical system for use in conjunction with a remote programmer and a power source, the implantable medical system comprising:

a central control module, comprising:

a housing configured to support the power source; and

a wireless receiver disposed in the housing, the wireless receiver configured to be coupled to the power source and to receive programming signals from the remote programmer;

an elongated conductor comprising at least one connector and having a distal end portion and a proximal end portion, the proximal end portion coupled to the central control module, the elongated conductor carrying power from the power source and digital communications including the programming signals from the wireless receiver, the power and the digital communications being combined on the at least one connector;

a plurality of leads;

a plurality of tissue-interactive elements associated with the plurality of leads; and

a satellite control module coupled between the plurality of leads and the distal end portion of the elongated conductor, the satellite control module comprising a housing such that at least a portion of the plurality of leads and the plurality of tissue-interactive elements are external of the housing of the satellite control module, the satellite control module being configured to utilize the power received through the elongated conductor to generate and selectively route electrical signals to selected ones of the plurality of tissue-interactive elements through the plurality of leads in accordance with the programming signals received from the remote programmer through the elongated conductor.

26. (Previously Presented) The implantable medical system of claim 25, wherein the electrical signals are produced within the satellite control module from the power received through the elongated conductor.

27. (New) The system of claim 1, wherein the power and the digital communications are combined on the at least one connector by the digital communications being superimposed on the power.

28. (New) The system of claim 1, wherein the power and the digital communications are combined on the at least one connector by the digital communications being interleaved with the power.